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Pesticide Fact Sheet Number 186: Streptomycin

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15. Supplementary Notes

16. Abstract (Limit: 200 words)

This document contains up-to-date chemical information, including a summary of the Agency's regulatory position and rationale, on a specific pesticide or group of pesticides. A Fact Sheet is issued after one of the the following actions has occurred.

1. Issuance or reissuance of a registration standard,
2. Issuance of each special review document,
3. Registration of a significantly changed use pattern,
4. Registration of a new chemical, or
5. An immediate need for information to resolve controversial issues relating to a specific chemical or use pattern.

17. Document Analysis a. Descriptors

Pesticides, regulations, Chemical Information Fact Sheet, Use Patterns, science findings.

b. Identifiers/Open-Ended Terms

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EPA

Pesticide Fact Sheet

Name of Chemical: STREPTOMYCIN
Reason for Issuance: Registration Standard
Date Issued: September 1988
Fact Sheet Number: 186

1. DESCRIPTION OF CHEMICAL

Chemical Name: O-2-Deoxy-2-(methylamino)-α-L-glucopyranosyl-(1->2)-O-5-deoxy-3-C-formyl-α-L-lyxofuranosyl-(1->4)-N,N'-bis (aminoiminomethyl)-D-streptomine

ANSI Common Name: Streptomycin

Other Common Names: streptamine

Principal Trade Names: Agri-Mycin 17®, Agri-Step®, Plantomycin®

EPA (Shaughnessy) Code: 006306, 006310 (streptomycin sulfate)

Chemical Abstracts Service (CAS) Number: 57-92-1, 3810-74-0 (streptomycin sulfate)

Year of Initial Registration: 1958

Pesticide Type(s): Fungicide

Chemical Family: Aminoglycoside antibiotic isolated from the bacterium Streptomyces griseus

U.S. and Foreign Producers: U.S. Merck & Co., Inc. and Pfizer, Inc.

2. USE PATTERNS AND FORMULATIONS

Registered uses: Terrestrial food crop uses on fruit and vegetables, terrestrial nonfood crop uses on tobacco and ornamentals, and greenhouse nonfood crop use on ornamentals

Uses: Ninety-eight percent of annual production is used on apples, pears, and tomatoes

Pests controlled (in general): Fungal diseases of selected fruit, vegetables, seed, and ornamental crops

Types of Formulations: Dust, wettable powder, wettable powder/dust, emulsifiable concentrate, pelleted/tablets, and liquid ready-to-use

Types and Method of Application: Foliar application by ground equipment, such as airblast. Other methods include: aircraft, duster attachment mounted over conveyor belt, hand-held or motor driven sprayers, dip treatment, tree injection treatment, slurry seed treatment.

Application Rates: Terrestrial food crop - 25 to 200 ppm
Terrestrial nonfood crop - 50 to 200 ppm

3. SCIENCE FINDINGS

Chemical Characteristics:

Physical state: powder
Color: pink to tan
Odor: burned sugar
Molecular Weight: 581.58; 1457.40 (streptomycin sulfate)
Empirical Formula: $C_{21}H_{39}N_7O_{12}$; $C_{42}H_{84}N_{14}O_{36}S_3$ (Streptomycin sulfate)

Toxicology Characteristics

Streptomycin has been used since the late 1940's to treat bacterial infections in humans. As a result of this use as a human drug, there is an extensive body of toxicological data available on streptomycin. Thus, all toxicological data requirements have been waived.

Physiological and Biochemical Characteristics

Metabolism and Persistence in Plants and Animals: The Agency has determined that plant and animal metabolism data were not needed for the following reasons:

- metabolism of streptomycin in mammals has already been traced in connection with its use in humans;
- residues are non-detectable (< 0.5 ppm) in or on crops when treated according to label use rates and directions;
- large amounts of toxicological data exist;
- most crops are treated at or before transplanting (celery, peppers, pototoes and tomatoes) and pome fruits are treated foliarly but with

a 30-day PHI for pears and a 50-day PHI for apples and crabapples

- potential daily exposure to streptomycin as a pesticide is < 0.01% of the daily clinical dosage (1-4 grams/day)

4. TOLERANCE ASSESSMENT

Tolerances have been established for residues of streptomycin in a variety of raw agricultural commodities at 0.25 ppm (40 CFR 180.245). These tolerances are supported by the available data. Tolerances must be proposed for residues of streptomycin in or on beans (succulent and dried), bean vines and bean hay to reflect the registered use on beans.

5. SUMMARY OF REGULATORY POSITIONS

- At this time, none of the risk criteria prescribing a Special Review have been met.

- While data gaps are being filled, currently registered manufacturing-use products and end-use products containing streptomycin as the sole active ingredient may be sold, distributed, formulated, and used, subject to the conditions of this Standard. In order to maintain existing registrations, registrants must provide or agree to develop additional data specified in the Data Appendices.

- No significant human dietary exposure is anticipated due to the lack of detectable residues and the long PHIs.

- Because of the large amount of existing human data, all toxicology requirements have been waived by the Agency for this Standard.

- The Agency is deferring to the Food and Drug Administration on the issue of development of streptomycin resistant microorganisms.

6. LABELING REQUIREMENTS

All streptomycin products must bear appropriate labeling as specified in 40 CFR 156.10. Appendix II of the Standard contains information on label requirements.

In order to remain in compliance with FIFRA, no pesticide product containing streptomycin may be released for shipment by the registrant after 12 months from receipt of the Guidance Document, unless the product bears amended labeling which complies with the specifications in the Standard.

In order to remain in compliance with FIFRA, no pesticide product containing streptomycin may be distributed, sold, offered for sale, held for sale, shipped, delivered for shipment, or received and (having been so received) delivered or offered to be delivered by any person after 24 months from receipt of the Guidance Document, unless the product bears amended labeling which complies with the specifications of the Standard.

Under the Precautionary Statements section of the label, the following statements must appear:

May cause allergic skin reactions. Do not breathe dust or spray mist. Wear dust mask and rubber gloves. Wash thoroughly after handling. This material is not to be used for medical, veterinary, or human purposes.

Do not apply this product in a way that will contact unprotected workers, either directly or through drift. Only protected handlers may be in the area during application. Do not enter or allow entry into treated areas until (sprays have dried/dusts have settled/ vapors have dispersed, as applicable) to perform hand labor tasks.

Decontamination

If the pesticide comes in contact with skin, wash off with soap and water. Always wash hands, face, and arms with soap and water before smoking, eating, drinking or toileting. Before removing gloves, wash them with soap and water.

7. SUMMARY OF DATA GAPS

Product Chemistry
(must be resubmitted)

Environmental Fate

Hydrolysis
Photodegradation
Aerobic and Anaerobic Metabolism
Soil Dissipation
Fish Accumulation
Adsorption/Desorption

Ecological Effects

Avian Acute Oral
Avian Subacute Dietary
Honey Bee Acute LD_{50}

8. CONTACT PERSON AT EPA

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9. DISCLAIMER: The information in this Pesticide Fact Sheet is a summary only and may not be used to satisfy data requirements for pesticide registration and reregistration. The complete Registration Standard for the pesticide may be obtained from the National Technical Information Service.

Contact the Product Manager listed above for further information.